



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,868	01/20/2004	Ljerka Ukrainczyk	SP03-007	5934
22928	7590	08/19/2005	EXAMINER	
CORNING INCORPORATED			CONNELLY CUSHWA, MICHELLE R	
SP-TI-3-1			ART UNIT	PAPER NUMBER
CORNING, NY 14831			2874	

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/762,868

Applicant(s)

UKRAINCZYK, LJERKA

Examiner

Michelle R. Connelly-Cushwa

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 7-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-14 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0704,0804,1104</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-6, drawn to a lensed fiber, classified in class 385, subclass 33.
- II. Claims 7-14, drawn to a method of making a lensed fiber, classified in class 65, subclass 387.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Timothy M. Schaeberle on August 16, 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-14 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Information Disclosure Statement

The prior art documents submitted by applicant in the Information Disclosure Statements filed on July 1, 2004 and August 24, 2004 have all been considered and made of record (note the attached copies of form PTO-1449).

The prior art document submitted by applicant in the Information Disclosure Statement filed on November 8, 2004 has not been considered because the document number does not agree with the name and date of the citation (note the attached copy of form PTO-1449).

Drawings

Three (3) sheets of formal drawings were filed on January 20, 2004 and have been accepted by the Examiner.

Specification

The disclosure is objected to because of the following informalities: in paragraphs [0007] and [0009], the disclosure recites " $\theta = n \sin^{-1}(NA)$ ", and in paragraph [0022], the disclosure recites " $\theta = n a \sin(NA)$ ". These two equations are not in agreement, thereby rendering the specification indefinite. Additionally, Applicant has not provided a definition of the variable "a", which is present in the equation in paragraph [0022]. Furthermore, in the art, the numerical aperture is defined as, $NA = n \sin(\theta)$, which gives $\theta = \sin^{-1}(NA/n)$. Therefore, the equations recited in paragraphs [0007], [0009] and [0022], do not agree with the definition of the numerical aperture of a fiber.

Appropriate correction is required.

Applicant is cautioned that any corrections should not add new matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1; the claim recites the limitation " $\theta = n \sin^{-1}(NA)$ " in line 4 of the claim, where NA is the numerical aperture, and n is the index of refraction. The definition of a numerical aperture is $NA = n \sin(\theta)$, which gives $\theta = \sin^{-1}(NA/n)$ when solved for θ . Therefore, this limitation in claim 1 is in contradiction to the definition of numerical aperture in the art, thereby rendering the claim unclear. For the purposes of examination, this equation has been treated as $\theta = \sin^{-1}(NA/n)$, since this agrees with the definition of a numerical aperture.

Regarding claims 2-6; the claims inherently contain the deficiencies of any base or intervening claims from which they depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaneko et al. (US 4,815,807).

Art Unit: 2874

Regarding claim 1; Kaneko et al. discloses a lensed fiber (see Figure 4), comprising:

- an optical fiber (42); and
- a lens (41) formed at the distal end of the optical fiber (42), the lens having a minimum diameter determined by $2 T \tan(\theta)$, where $\theta = \sin^{-1}(NA/n)$, wherein T is the thickness of the lens, n is the index of refraction, and NA is the numerical aperture. (see column 3, lines 1-20).

For comparison, the radius (R) in line 20 of column 3 is given as $R \geq L \tan \theta_c$, and θ_c in line 12 of column 3 is given as $\theta_c = \sin^{-1}(NA/n)$, wherein R is the radius and the diameter is twice the radius, L is the thickness, NA is the numerical aperture and n is the index of refraction. Therefore, $2R=D$; wherein D=diameter, and $D \geq 2 L \tan \theta_c$, wherein $\theta_c = \sin^{-1}(NA/n)$.

Regarding claim 2; the radius of curvature of the lens is not smaller than a mode field radius of a mode in the lensed fiber at an apex of the lens.

Regarding claims 3-5; Kaneko et al. discloses that a radius of curvature of the lens is in a range from approximately 50 to 5,000 micrometers; that a thickness of the lens is in a range from approximately 15 to 18, 000 micrometers; and that a distance to beam waist in air of the lens is in a range from approximately 0 to 100 mm (see Table 1).

Claim Rejections - 35 USC § 103

Art Unit: 2874

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (US 4,815,807).

Regarding claim 6; Kaneko et al. discloses all of the limitations of claim 6 as applied above, except for specifically stating that a mode field diameter at beam waist of the lens is in a range from approximately 3 to 1000 micrometers. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the mode field diameter at beam waist of the lens be in a range from approximately 3 to 1000 micrometers, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233) and that discovering the optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ (CCPA 1980)).

Conclusion

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone

Art Unit: 2874

number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

Michelle R. Connelly-Cushwa
Michelle R. Connelly-Cushwa
Patent Examiner
August 17, 2005